



County of Los Angeles Department of Health Services Public Health Programs and Services

Tuberculosis Control Program

TUBERCULOSIS CONTACT INVESTIGATION STANDARDS¹

Contact investigation is an epidemiological investigation which must be done for every new reported index case of TB (suspected or confirmed). Pediatric TB cases require investigation to determine the source case (see "Standards for Source Case/Associate Investigation").

I. PURPOSE

Contact investigation identifies, examines and evaluates all persons who are at risk of infection with *M. tuberculosis* due to recent exposure to a diagnosed or suspected index case. It is a method for new case finding and allows for early treatment of disease, and early detection and treatment of a new infection. In some cases, it may prevent infection. It is an essential component of tuberculosis containment.

II. OBJECTIVE

To identify contacts to the index case, determine their risk status, and provide appropriate follow-up treatment.

III. GOAL

Containment of tuberculosis by prevention of secondary TB cases and interruption of the progressive cycle of disease from infection to further infection.

¹ These guidelines are based on the standards set by: 1) Centers for Disease Control (MMWR, 9/8/95/Vol.44/No.RR11 - "Essential Components of a TB Prevention and Control Program; Screening for TB and TB Infection in the High Risk Populations"). 2) American Thoracic Society ("Treatment of TB and TB Infection in adults and children; Am J Respir Car Crit Med, 1994; 149 1359-1374) and 3) California TB Controllers Association and California Department of Health Services ('California TB Control Policy Guidelines' 11/4/91. 4) American Thoracic Society ('Control of TB in the United States', Am. Rev. Dis. 1992, Vol 146, 1623-1633).

Approved by: _____
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IV. Definitions - General

- A. Index case - the first person who presents for evaluation as a confirmed or suspected case of tuberculosis.
- B. Source Case Finding - an investigation to determine the source of TB infection or disease in an index case. This is especially important in children under the age of 4 with TB infection or disease and in some cases a documented converter. For follow-up in children, see "Protocols for Source Case/Associate Investigation."
- C. TB contacts - those persons who have a risk of acquiring tuberculosis because they have shared air with the index patient. The degree of risk is dependent upon the duration and frequency of exposure and is influenced by the degree of infectiousness of the patient. The risk and urgency for follow-up is also influenced by characteristics of the environment and by the contact's likelihood to progress from infection to disease.

V. Definition of Risk Levels

A. Higher risk

1. To transmit TB (case/suspect):

Determining the risk level and urgency for follow-up involves the examination of all of the following factors. In general, a high risk condition exists with either one of the following conditions:

- a. Index case is sputum smear positive
- b. Environmental (When index case is smear positive, an even higher risk of transmission exists):
 - Significant close exposure to contact. (Smear positive or negative). This may be frequent (prolonged or short visits) or one prolonged visit.
 - Other considerations:
 - poor ventilation
 - crowded living conditions
 - unprotected exposure during cough inducing activity/procedure
 - inadequate treatment for tuberculosis
 - coughing

2. To become infected, or to progress to disease (contact):

Determining the risk level and urgency for follow-up involves the examination of all of the following factors. In general, a high risk condition exists with any one of the following conditions.

- a. Any uninfected person who shared the air environment with a smear positive case. Exposure may be close or casual. Level of risk must be assessed on a case by case basis.
- b. Any uninfected person who is a close contact and shared the air environment with a smear negative case.
- c. Children under age 4.
- d. Persons who are HIV+ or have HIV risk factors
- e. Other immunocompromised contacts regardless of other risk factors.

Note: Because of the increased risk of rapid progression to active disease, it is recommended that these contacts be assessed as soon as possible.

B. Lower Risk

1. To transmit TB (case/suspect):

- a. Index case is sputum smear negative
- b. Environmental:
 - 1b. Exposure is short/occasional/casual
 - 2b. Good ventilation or exposure out of doors.

2. To become infected or to progress to disease (contact):

- a. Any uninfected person who shared the air environment with an index case and none of the higher risk conditions listed above are present. Assess on a case by case basis.
- b. Previous documented infection with TB - positive Mantoux tuberculin skin test.

VI. Steps in Conducting a Contact Investigation (see Attachment 1 - TB Contact Investigation Algorithm)

A. Risk assessment of index case - every newly suspected or confirmed TB patient of any age must have a risk assessment to determine the scope and priority of the investigation.

B. Risk assessment procedure for index case:

1. A medical record review, and, if necessary, call the medical provider or lab to obtain as much information as possible on the following data within 24 hours or next working day of receiving report notification.
 - a. Site of disease
 - b. Date of onset and type of symptoms
 - c. Chest x-ray result
 - d. Type of TB medicines and start date
 - e. Bacteriology and name of lab where specimen sent
 - f. High risk medical conditions
 - g. Employment history/work site information
 - h. Living situation/social factors
 - i. Sections 1,3,4,5, of the Contact Investigation Report (H-289) should be completed
2. Determine and record degree of risk, higher or lower, for this index case to transmit TB to others based on bacteriological, clinical, and social/cultural findings.
3. Assessment of risk factors and the initiation of contact investigation should not be delayed if unable to obtain data on all of the above. Initially, the degree of infectiousness is the most important factor to determine.

C. Investigation/Interview/Assessment of Contacts

1. Higher risk to transmit - highest priority of investigation.
 - a. Home visit should be made within 3 working days of receiving the case notification to interview the index case and/or household concerning his/her contacts. This investigation should be done face to face, not by telephone. A field visit must be made to examine the patient's environment. The case manager should work with health department staff in all jurisdictions involved with the case to develop a complete list of contacts.
 - b. Begin the interview process
 1. Explain your role and the purpose of the interview.
 2. Stress to the patient that all information will remain confidential. (See Section VI, C, 3).
 3. Continually assess the patient's ability to comprehend your questions. Use interpreter if necessary.
 4. Review the patient's understanding of TB and how it is transmitted.
 5. Discuss the importance of examinations for persons who have shared air with the patient and explain the skin test procedure.

6. Collect information for Contact Investigation Report (H-289) including information addressing home, work, or school locations.
 7. Question the case about his/her activities during infectious period at sites other than home, work, or school (e.g., church groups, bar, correctional facility, "crack-house," drug treatment center, or any other frequently visited sites/people).
- c. Determine if contacts are higher risk to progress to disease if they become infected (children < 4 years of age, those with HIV+ or have HIV risk factors or immunocompromised).
 - d. Complete list of contacts with information on risk level on the Contact Investigation Report (H-289).
 - e. Additional field visits should be made to examine other sites where transmission from the patient may have occurred.
 - f. See Attachment 2 for suggestions of where to obtain further information to assist in locating contacts.
 - g. Reinterview the patient several times to assure that all contacts have been identified.
2. Lower risk conditions:
 - a. Review with clinician the extent of contact investigation required and record recommendations.
 - b. Contact should be made within 7 working days of receiving case notification.
 - c. Begin the interview process, as stated above.
 - d. Determine if contacts are at higher risk to progress to disease if infected (children < 4 years, those with HIV+ or have HIV risk factors, and immunocompromised. These contacts should be given priority for examination).
 - e. Complete list of contacts and information on level of risk on the Contact Investigation Report (H-289).
 3. Confidentiality:²
 - a. Household/Social Contacts:
 Explain to the patient that his/her name will not be mentioned to social contacts without permission. The patient can assist you in determining the level of risk for his/her contacts. The contacts can receive follow-up without needing to use patient's name, unless he/she gives permission.

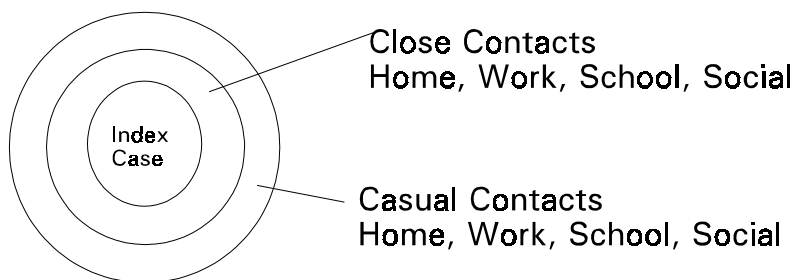
²Legal authority: California Health and Safety Code, Sec. 121365E

b. Work/School/Other Group Contacts:

These contacts may need to be tested depending on the infectiousness of the case, the environmental factors, and the skin test results of the other contacts. In some settings, a few persons will need to know the name of the case to assure all contacts are identified and to determine their level of risk. Ask the patient for the name of a person of authority at the site that you can contact to begin the investigation. Assure the patient that his/her name will not be announced as the index case and that the persons that we arrange the testing with will be advised to keep his/her name confidential. However, counsel the patient that in these types of testing situations, others often figure out who the index case is. If the patient has any problems (e.g., being ostracized) at the site, the case manager should be notified so additional education can be done. Problems that develop are usually due to lack of understanding of TB and can be minimized by providing TB education. If the person refuses to give contact information, consult with your supervisor and TB Control on how to proceed.

4. Expanding the concentric circles of investigation:

- a. Begin by examining persons in the inner circle who are at higher risk of becoming infected - those with closest exposure in the home, at work or school and in social settings.
- b. Evaluate the results of the higher risk contact investigation. If there is evidence of transmission to the higher risk contacts (e.g., a higher than expected number of positive skin tests, and/or converters, or secondary active cases), move to the next circle of contacts who are more casual in their exposure at home, at work, at school or in social settings.



VII. Evaluation of Contact Investigation

A. It is recommended that the progress of the contact investigation and follow-up be reviewed at the following intervals:

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|--|---|
| 1. After assessment of risk is determined | <u>2 working days after case notification</u> |
| 2. After contacts are recorded on the H-289 for the purpose of reviewing the number of contacts, their relationship to the index case, and if adequate investigation was done. | <u>7 to 14 working days after case notification</u> |
| 3. If problems arise that delay the contact investigation | <u>at any point during contact follow-up</u> |
| 4. After or near completion of all initial contact investigation | <u>1 month after case notification</u> |
| 5. After completion of all contact follow-up | <u>3 to 4 months after case notification</u> |

B. For contacts living in other census tracts, districts or jurisdictions, PHN will coordinate follow-up.

C. TB Control is responsible for the quality control of all aspects of contact investigation.

VIII. Medical Management of Higher Risk Contacts

Screening (skin testing and/or x-ray) of TB contacts for infection and/or disease should be done as soon as possible within 7 working days after home visit with index case. Medical assessment should be completed within 10 working days of home visit. Every effort should be made to identify and find contacts within the time frame stated above. For those contacts not identified during the initial home visit, screening, examination and follow-up should be done within 7 working days of being identified.

A. Initial visit:

1. Place Mantoux tuberculin skin test with 5 TU PPD unless history of a

prior positive skin test or treatment of tuberculosis disease is documented in writing (10mm or more). Skin testing (and reading 2-3 days later) may be performed in the field to enhance adherence.

2. Arrange for or do an immediate chest x-ray for contacts to smear positive cases, children < 4 years, those who are HIV+ for have HIV risk factors, and the immunocompromised. Chest clinician should read film before it is sent to the radiologist.
3. Clinical evaluation: If symptomatic and/or x-ray abnormal, manage as a TB suspect.

B. For skin test reading of 5mm or more:

1. Take chest x-ray if not already done.
2. If chest x-ray is normal and if patient is asymptomatic, strongly recommend INH preventive treatment (unless medically contraindicated) for 6-12 months. Length of therapy is dependent upon age and/or risk factors.
3. If chest x-ray is abnormal, or if patient is symptomatic, arrange for an immediate diagnostic evaluation and appropriate treatment as a TB suspect.

C. For skin test reading less than 5mm:

1. For contacts to smear positive cases, children < 4 years, those with HIV+ or have HIV risk factors, and the immunocompromised:
 - a. Do chest x-ray if not already done.
 - b. If chest x-ray is normal, strongly recommend INH and continue drug for three months from the date of last exposure to potentially infectious index case.
 - c. Repeat skin test three months after last exposure to infectious case.
 - If still less than 5mm, discontinue the INH and discharge from supervision if index case is non communicable and/or contact has been broken.
 - If skin test converts to 5mm, or larger, continue with INH for a total of 6-12 months depending on age and/or risk factors. If patient has been symptomatic or noncompliant with INH regimen, repeat chest x-ray and assess for follow-up as a TB suspect.
 - Evaluation should be made of immunocompromised contacts to

determine if repeat negative skin test is valid. This is important because of possible anergy. If anergic, continue INH for 12 months.

2. For close contacts to smear negative cases:

- a. Repeat skin test 3 months from date of last exposure.
- b. If skin test converts to 5mm or larger, take a chest x-ray.
- c. If chest x-ray is normal, and if patient is asymptomatic, strongly recommend INH preventive treatment (unless medically contraindicated) for 6-12 months. Length of therapy is dependent upon age and/or risk factors.
- d. If chest x-ray is abnormal, or if patient is symptomatic, arrange for an immediate diagnostic evaluation and appropriate treatment as a TB suspect.

D. For those 55 years or older, two-step skin testing may be considered by the clinician if the first test is negative. If the second test (done 7-10 days later) is positive, interpretation of this result (past infection vs. infection from current exposure) should be done on a case by case basis. If second test is negative, follow-up as above in Section VIII C.

E. Failure to comply with screening, exam and/or preventive treatment recommendations.

1. See TB manual section on broken appointment follow-up and algorithm (Attachment 3).
2. Every effort (including incentives) must be made to assist contacts to follow-up within the time frames mentioned.
3. If necessary, legal orders issued by TB Control may be required for the contact to comply with screening and exam recommendations within a specified time frame.
4. Individuals who refuse preventive treatment should be counseled regarding the possibility of future disease and discharged from supervision if skin test placed three months after last exposure is negative. Documentation of referral and counseling is to be noted in the medical record.
5. Attempts should be made to notify primary care physician of children < 4 years, persons who are HIV+ or have HIV risk factors, or other immunocompromised contacts who refuse preventive therapy.

IX. Medical Management of Lower Risk Contacts

Note: Children under age 4, those with HIV+ or have HIV risk factors or other immunocompromised contacts are always higher risk contacts.

A. Screening (skin test and/or x-ray) should be done within 14 working days after home visit with index case. Medical assessment should be completed within 28 working days of home visit. Every effort must be made to identify and find contacts within the time frame stated above. For those contacts not identified during the initial home visit, screening, examination, and follow-up should be done within 14 working days of being identified.

1. Arrange for a Mantoux tuberculin skin test with 5 TU PPD unless there is documented history of prior positive skin test or treatment for tuberculosis disease. Two-step skin testing may be considered as stated before in Section VIII D.
2. Clinical evaluation:
 - a. If symptomatic (e.g., cough and sputum production), obtain chest x-ray and additional work-up as indicated.
 - b. If asymptomatic, and/or no evidence of actual disease, follow-up as below.

B. Skin test reading

1. Mantoux positive, 10mm induration or larger; obtain chest x-ray and follow as a tuberculosis infection Class II (see TB Manual).
2. Mantoux skin test less than 10mm
 - recommend to the patient that he/she should return for a repeat skin test in 3 months
 - if negative, close
 - if positive, follow as B1.

C. Failure to comply: No effort should be made to obtain examination of the lower risk contact group who does not come in voluntarily.

X. Management of All Contacts for Whom There Appears to be Negligible Risk for Transmission of TB

A. Self described contacts who do not meet the definition of higher or lower risk contacts should be treated as screening subjects.

- B. If these contacts come in voluntarily, offer education and skin test for reassurance and follow as routine TB screening.
- C. Such individuals should not be identified as contacts on the Contact Investigation Report (H289).

XI. Management of All Contacts With a Previously Documented Positive PPD

- A. Contact with a previously documented positive PPD must be screened for TB symptoms.
 - 1. If symptomatic, arrange for a chest x-ray and an immediate clinical evaluation.
 - 2. If asymptomatic with no other medical risk factors and did not previously complete INH, refer to clinician to assess the need for a chest x-ray and INH preventive therapy.
 - 3. If **not** immunocompromised, asymptomatic, and having completed an adequate course of INH, they need no further follow-up. An x-ray may be considered if clinical status changes.
 - 4. If immunocompromised, asymptomatic, and no previous history of completing an adequate course of INH preventive therapy, arrange for a chest x-ray and recommend INH preventive treatment for 12 months. If chest x-ray abnormal, handle as a suspect.
 - 5. If immunocompromised, asymptomatic, and completed an adequate course of INH preventive therapy, arrange for a chest x-ray and refer to the clinician for consideration of a repeat course of INH preventive therapy. If chest x-ray abnormal, handle as a suspect.

XII. Management of Contacts to Drug Resistant TB

- A. Evaluate contacts as per risk.
- B. Consult with TB Control prior to initiating preventive therapy regimen for contacts to MDR or suspected MDR.

XIII. Management of Contacts by Providers Outside of the Health Department

- A. Contacts may be followed by providers outside of Health Department
- B. The follow-up and timelines are the same for all providers.
- C. To complete contact investigation, the PHN case manager must obtain information on any screening and follow-up done by outside providers to assure that the follow-up has been completed. The H-687 letter (attachment 4) may facilitate retrieval of this information. This letter is available in TB Control.